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PATENT DEPARTMENT (51851)  
KILPATRICK STOCKTON LLP  
1001 WEST FOURTH STREET  
WINSTON-SALEM, NC 27101

EXAMINER
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BODDIE, WILLIAM

ART UNIT	PAPER NUMBER
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2629

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11/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

09/393,998

Applicant(s)

CULVER, CRAIG F.

Examiner

William L. Boddie

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 24-46, 48-62, 64-66, 74-78 and 84-94 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 64-66 and 74-78 is/are allowed.
- 6) ☒ Claim(s) 24-46, 48-62, 84-90 and 92-94 is/are rejected.
- 7) ☒ Claim(s) 52 and 91 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. In an amendment dated, September 21<sup>st</sup>, 2007, the Applicant amended claims 24, 46, 58, 74, 78 and 86. Currently claims 24-46, 48-62, 64-66, 74-78, 84-94 are pending.

#### ***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 21<sup>st</sup>, 2007 has been entered.

#### ***Response to Arguments***

3. Applicant's arguments filed September 21<sup>st</sup>, 2007 have been fully considered but they are not persuasive.

On pages 19-22 of the Remarks, the Applicants argue that Marcus discloses a device to be used by two hands, one to support and the other for operation. As such the Applicants allege that Marcus does not satisfy all of the limitations of the amended claims.

4. The Examiner must respectfully disagree for two reasons. First it should be noted that figure 2a is not the only embodiment that Marcus contemplates. As shown by the claim 1 limitations of Marcus all that is required is that the device be small enough to be supported by one hand of an operator. From this limitation we see that

while the user *may* use an additional hand on the device this is not required. Additional evidence of this may be seen in column 3 lines 44-46 of Marcus which states: “[t]he input device 10 includes a housing 20 which is sized and configured to be grasped comfortable with at least one hand of a user as shown in FIG. 2A.” The Applicants would have this statement only address the supporting of the device and claim that this still requires an additional hand to operate the device. This seems an unreasonable interpretation of the disclosure. One has to ask what would be the purpose of being able to comfortably grasp the device with one hand if one could not also operate the device with that same hand. As such Marcus is seen as contemplating a single-handed support and operation and the rejections are therefore updated to incorporate the newly added limitations and maintained.

5. Secondly, the Examiner is not convinced that the current claim limitations preclude a user from adding a second hand to operate the device. For example, the Applicants claim that the user’s right hand in figure 2a merely supports the device while the user’s left hand operates the device. This is not entirely true. It is obvious from figure 2a that the user’s right hand also operates the device, in that the right thumb depresses buttons. Thus under this interpretation of the claim Marcus quite expressly discloses the traversed claim limitations. The user’s right hand supports the device housing and the same right hand is used to operate the buttons of the device.

For these two reasons, the previously cited rejections are seen as sufficient and are thus maintained.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 24 recites the limitation "said first and second dimensions" in line 10.

There is insufficient antecedent basis for this limitation in the claim.

Claims 25-45 and 84 are also rejected under 35 U.S.C. 112 by virtue of their dependency on claim 24.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 46, 48, 50-51, 53-59, 61-62, 85-86, 88-90 and 94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcus et al. (US 5,643,087) in view of Gillick et al. (US 5,530,455).

**Regarding to claims 46, 54, 56, 58, 59, 86 and 94,** Marcus discloses an interface control device in communication with a computer for providing positioning signals to said computer for manipulating an image in a computer environment displayed on a screen by said computer (col. 3, lines 20-50), said device comprising:

a support housing configured to be held by one hand of a user such that no additional support is needed to operate the device (right hand in fig. 2a; col. 6, lines 8-12 and 22-23);

a user manipulatable member (13, Fig. 2) coupled to said housing and engageable and moveable by a single thumb of said user in two degrees of freedom relative to said housing, and configured with a contact surface configured to be contacted by said thumb;

at least one sensor coupled to said user manipulatable member and operative to sense movement of said user manipulatable member in said two degrees of freedom (col. 1, lines 45-58), said sensor operative to provide positioning signals which control positioning of said image on said screen by said computer;

at least one actuator coupled to said interface control device (Abstract), wherein said actuator is operative to provide a feedback force to said user that is correlated with an interaction of said displayed image in said computer environment (Abstract),

wherein said interface control device is configured to be operated by said one hand of a user (right hand in fig. 2a operates buttons; see above Response to Arguments).

Marcus does not disclose a thumb trigger sensor operative to detect a trigger command from said user and to cause a trigger signal to be sent to said computer, the trigger command including a pressing motion by said thumb causing said user manipulatable member to move.

Gillick discloses an input device comprising a user manipulatable member (24, Fig. 1) moveable in a rotary degree of freedom, a trigger sensor (35, 37, Fig. 5) operative to detect a trigger command from a user and to cause a trigger signal to be sent to a computer, the trigger command including a pressing motion by finger of the

user causing said user manipulatable member to move in a trigger degree of freedom different from the rotary degree of freedom.

Gillick and Marcus are analogous art because they are from the same field of endeavor namely, finger operated cursor control devices.

In light of Gillick, it would have been obvious to one of ordinary skill in the art to use Gillick's thumb trigger sensor in Marcus' input device.

The motivation for doing so would have been the well-known benefit of allowing the user to activate the trigger sensor without removing his/her thumb from the user manipulatable member.

**Regarding to claims 48 and 88,** Marcus and Gillick disclose, the interface control device as recited in claims 46 and 86 (see above).

Marcus, when combined with Gillick, discloses, the user manipulatable member moveable in a rotary degree of freedom (Marcus; Fig. 2) wherein said rotary degree of freedom allows a pivoting motion of said digit of said user (Marcus; fig. 2) and moving the user manipulatable member in a linear degree (Gillick; trigger degree) of freedom.

**Regarding to claims 50, 62,** Marcus and Gillick disclose, the interface control device and method of claims 46 and 58 (see above).

Marcus further discloses a first brake providing a drag in a first of said two degrees of freedom, and a second computer controlled brake coupled to said user manipulatable member and providing a drag in a second one of said degrees of freedom of said user manipulatable member (col. 3, line 50 to col. 4, line 22).

**Regarding to claims 51, 61, 85 and 90,** Marcus and Gillick disclose the interface control device and method of claims 50, 58, 46 and 88 (see above).

Marcus further discloses, said user manipulatable member is coupled to an arm member (21, Figs. 3 and 4) having rotary motion about a pivot point, wherein said first brake is coupled to said arm member to output forces about said pivot point (clear from figs. 3-4).

**Regarding to claim 53,** Marcus and Gillick disclose the interface control device as recited in claim 46 (see above).

Marcus, when combined with Gillick, further discloses a cursor that can be used to select an icon displayed on a screen, wherein said trigger command selects said icon when said cursor is positioned over said icon (col. 8, lines 51-60, for example).

**Regarding to claim 55,** Marcus and Gillick disclose the interface control device as recited in claim 46 (see above).

Marcus further discloses said device is provided in an automobile dashboard or automobile steering wheel (col. 1, lines 34-35).

**Regarding to claim 57,** Marcus and Gillick disclose the interface control device as recited in claim 46 (see above).

Marcus and Gillick do not expressly disclose using an electro-rheological compound in the actuator.

The examiner takes Official Notice that using an electro-rheological compound in the actuator is old and well known in the art.



The motivation for using an electro-rheological compound being the well-known benefit of the speed with which electro-rheological compounds respond.

**Regarding to claim 89**, Marcus and Gillick disclose the device as recited in claim 88 (see above).

Marcus further discloses said rotary degree of freedom comprises a path of less than ninety degrees (col. 5, lines 54-57).

10. Claim 24-27, 32-34, 36-45, 49, 60, 84, 87, and 92-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcus et al in view of Gillick et al. as applied to the claims above, and further in view of Armstrong (US 5,589,828).

**Regarding to claims 24-27, 32, 36-45, 49, 60, 84, 87**, the combination of Marcus and Gillick, as indicated above teaches the claim limitations except for the first and second dimension (the two degrees of freedom) are approximately orthogonal to the third dimension (the trigger degree of freedom).

Neither Marcus nor Gillick disclose, an input device comprising a user manipulatable member moveable in two degrees of freedom which are provided substantially in a single plane.

Armstrong, in the same input field, discloses an input device comprising a user manipulatable member moveable in two degrees of freedom which are provided substantially in a single plane (col. 7, lines 5-18).

It would have been obvious to one of ordinary skill in the art to substitute Armstrong's two degrees of freedom movement means for Marcus and Gillick device's

two rotary degrees of freedom means because Marcus teaches other concepts can be used in the invention (col. 5, line 65 to col. 6, line 2).

**Regarding to claim 33**, Marcus, Gillick and Armstrong disclose the interface control device as recited in claim 24 (see above).

Marcus further discloses the actuator is a motor (col. 1, lines 62-63).

**Regarding to claim 34**, Marcus, Gillick and Armstrong disclose, the interface control device as recited in claim 24 (see above).

Marcus, when combined with Gillick and Armstrong, further discloses a centering spring (Armstrong; 176, 177a, 210a and 228, cols. 5-6) return configured to a bias on said user manipulatable member to return to a center position after said user manipulatable member has been moved from said center position.

**Regarding to claims 92-93**, Marcus and Gillick disclose, the interface control device as recited in claim 86 (see above).

Neither Marcus nor Gillick expressly disclose, a centering element.

Armstrong, in the same input field, discloses a centering spring (Armstrong; 176, 177a, 210a and 228, cols. 5-6).

It would have been obvious to one of ordinary skill in the art to include the centering spring of Armstrong's in the input device of Marcus and Gillick.

The motivation for doing so would have been because Marcus teaches other concepts can be used in the invention (col. 5, line 65 to col. 6, line 2) as well as the well-known benefit of returning the member to a common starting point each time the user operates the device.

***Allowable Subject Matter***

11. Claims 28-31, 35, 52, and 91 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 28-31 and 35 should also be rewritten to overcome the above cited 35 U.S.C. 112 rejection.

12. Claims 64-66, 74-78 are allowed.

***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Barker (US 6,281,883) discloses an input device that is solely supported and solely operated by one hand of the user.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William L. Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Wlb  
11/1/07

  
**SUMATI LEFKOWITZ**  
SUPERVISORY PATENT EXAMINER